Get High Performance and Flexibility at a Compelling Value with the Cisco MDS 9148 Multilayer Fabric Switch

Commercial customers are experiencing rapid storage growth, primarily as a result of email, database, and backup and archive applications and compliance and regulatory requirements. For a business to be competitive in the current economic environment, its IT department must adapt to limit capital expenditures (CapEx) while optimizing operating expenses (OpEx).

As small organizations strive to meet strategic business and application needs, they are often challenged by economic realities to find an innovative solution that is high performing, flexible, agile, highly available, secure, and simple while also being cost effective. These organizations are looking for the following in their SAN infrastructure:

- High performance
- Flexibility and agility in infrastructure consolidation
- Low total cost of ownership (TCO)
- Enterprise-class richness in high-availability, security, and management features

Cisco recognized these requirements when building the Cisco® MDS 9148 Multilayer Fabric Switch. The Cisco MDS 9148 Fibre Channel SAN switch is purpose-built to provide an affordable and highly capable solution for the commercial market, offering:

- High performance
- Flexibility
- Enterprise-class capabilities at an entry-level, cost-effective price

The Cisco MDS 9148 switch offers small and medium-sized businesses (SMBs) compelling enterprise-class features and high performance at a low cost. This innovative solution is designed to be highly capable and easy to configure and manage. At a time when organizations are optimizing their budgets for the lowest TCO for infrastructure, value can be found in the Cisco MDS 9148 fabric switch.

High Performance

Challenge: Optimize Infrastructure for Best Price to Performance Ratio

A common challenge in the marketplace is the demand for higher server performance, which will require higher network speeds in the SAN. Organizations need to consider SAN performance in building the next-generation storage infrastructure to support higher speeds and rich feature capabilities.

Solution: Cisco MDS 9148 Provides Outstanding Price to Performance Ratio to Support Application Needs

In a cost-conscious, budget-constrained economy, organizations must look at application needs and deploy solutions that provide the best price:performance ratio. The Cisco MDS 9148 is bandwidth optimized for application performance at 8-Gbps line rate on all 48 available ports, giving the switch 384 Gbps of aggregate bandwidth. Furthermore, with 48 ports, the switch has the highest port density on the market today in a 1 rack unit (RU) form factor, optimizing the performance footprint.

Flexibility for Consolidation and Virtualization

Challenge: Deploy a SAN Solution That Is Agile and Flexible
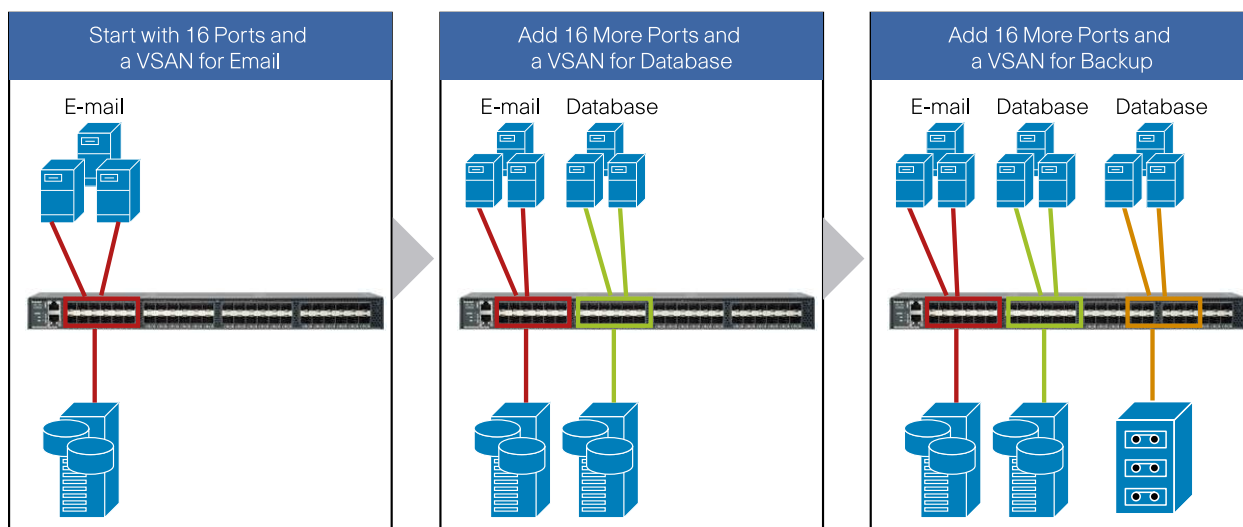
Organizations are always looking for ways to optimize physical resources to reduce operating costs such as energy use and decrease capital expenditures to achieve a low TCO. Lack of flexibility and agility in SAN solutions hinders optimal utilization of IT resources.

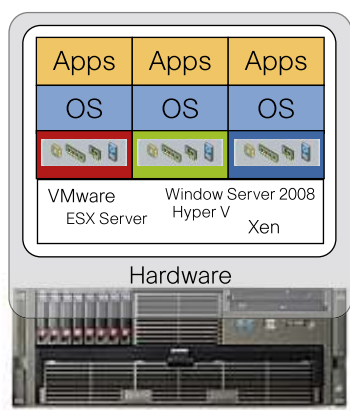**Solution: Cisco MDS 9148 Provides End-to-End Consolidation and Virtualization of SANs**

The Cisco MDS 9148 offers up to 48 8/4/2/1-Gbps autosensing ports in a compact 1RU chassis. Organizations can deploy the switch in the port configuration needed to meet the current demand and enable additional ports on demand when needed. The switch supports an 8-port on-demand license that can be applied on the switch to expand from the 16-port base configuration to 48 ports.

Cisco invented the concept of virtual fabrics, called virtual SANs (VSANs). VSANs allow the creation of separate virtual fabric services within a physical switch. With the flexibility to create VSANs on a per-port basis and the flexibility of the Cisco MDS 9148 to activate ports as needed, SMB environments can now easily and dynamically build VSANs for separate applications (Figure 1).
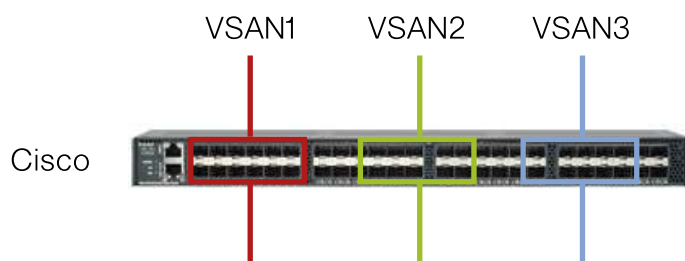
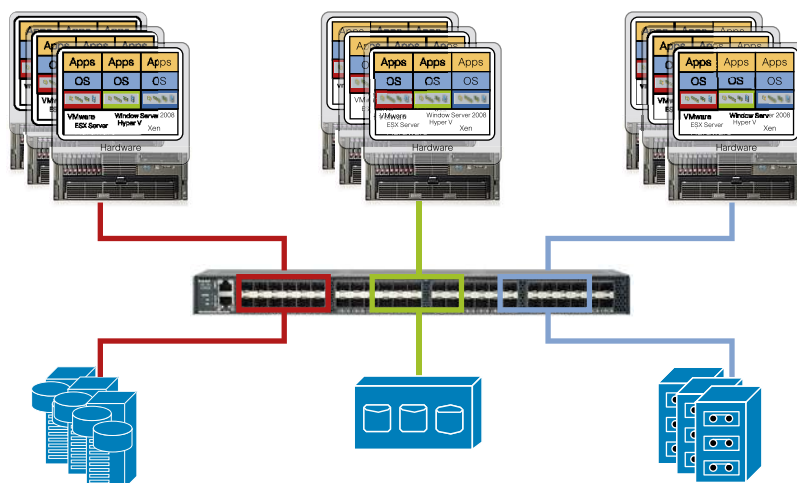**Figure 1.**   Cisco MDS 9148 Flexibility

Virtualization consolidates servers for increased server utilization. Industry-leading virtualization software for servers such as VMware ESX Server, Microsoft Windows Server 2008 Hyper-V, and Xen creates virtual machines running on the same physical server so that server resources are optimized for performance (Figure 2).
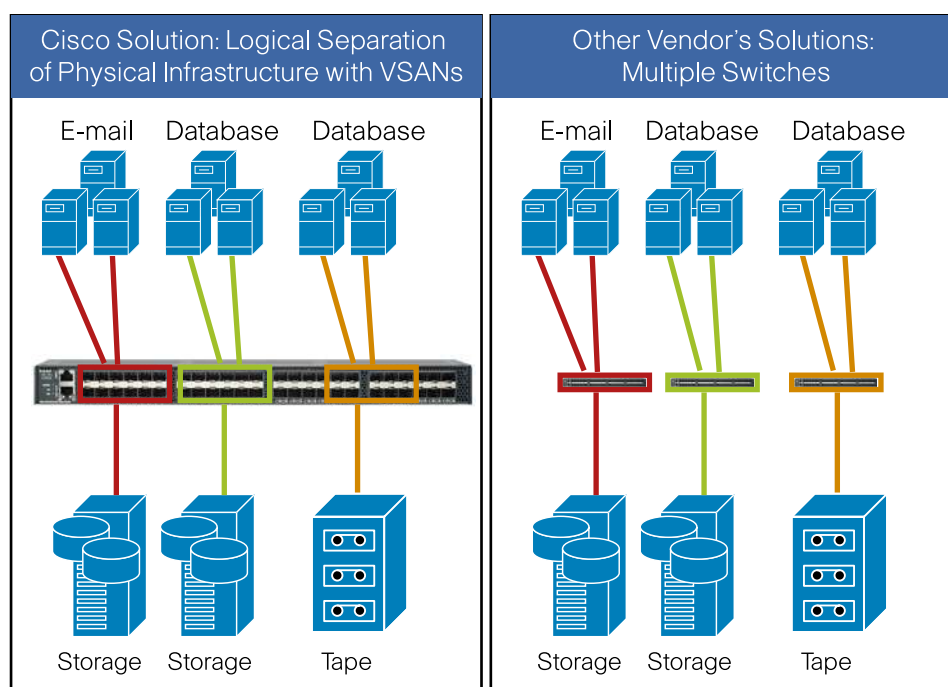
Figure 2. Virtualized Server

Similarly, fabric virtualization is needed on the SAN infrastructure to provide end-to-end virtualization, from server hosts to storage targets. Cisco's VSAN technology virtualizes the SAN switch when bridging servers with storage. VSANs create logical SANs that emulate the physical infrastructure to provide flexibility in deployment and consolidation (Figure 3).

Figure 3. Virtualized SAN Switch

The Cisco MDS 9148 has features to extend the virtual machines to storage as well as to virtualize the SAN itself (Figure 4). These features are provided on the entry-level SAN switch at no additional cost.

Figure 4. Server-to-Storage Virtualization

Cisco's VSAN technology also provides infrastructure consolidation by combining multiple physical SAN switches as logical entities in a one physical switch. This consolidation results in major cost savings for organizations by reducing CapEx for additional switches and inefficient utilization of storage (Figure 5).

Figure 5. Cisco VSAN Consolidation to Reduce CapEx

Cost Effective

Challenge: Deploy a Cost-Effective, Highly Capable SAN Solution

SMBs require rich features and functions to be competitive and grow their businesses. However, these organizations do not have the capital and operating budgets to afford features such as high availability and the simple management tools available for large enterprises.

Solution: Cisco MDS 9148 Offers a Highly Capable SAN Solution at a Low Price

The Cisco MDS 9148 switch is available at a low cost in the departmental SAN switch market. It is the most cost-effective switch in the industry today. According to pricing comparison from leading original equipment manufacturer (OEM) SAN vendors, the Cisco MDS 9148 configured for a departmental Fibre Channel SAN costs 20 percent less than comparable switches of competing vendors.

In addition, competing vendors charge licensing fees to enable capabilities on their switches that can more than double the price of the base configuration. These same capabilities are available for no additional cost on the Cisco MDS 9148 (Table 1). The Cisco MDS 9148 is the only SAN switch in the industry that provides highly capable features and functions for no additional cost in comparison with competitive switches[1].

Table 1. Comparison of Features in Cisco MDS 9148 and Competing Products

Feature	Cisco MDS 9148	Comparable Switches from Other Vendors	Business Benefits of Cisco
Virtual fabric support	No additional cost	Limited; not available in entry-level switches	• Cost savings; fewer SAN switches needed
Switch-to-switch connections and SAN extension	No additional cost	Fee for optional license	• Scalability and business continuity without additional cost • No additional charge to connect two switches together or to extend the SAN
High availability of link	No additional cost	Fee for optional license	• Reduced disruptions; included without additional cost on Cisco switches

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[1] Found in a comparison with two major competing vendors

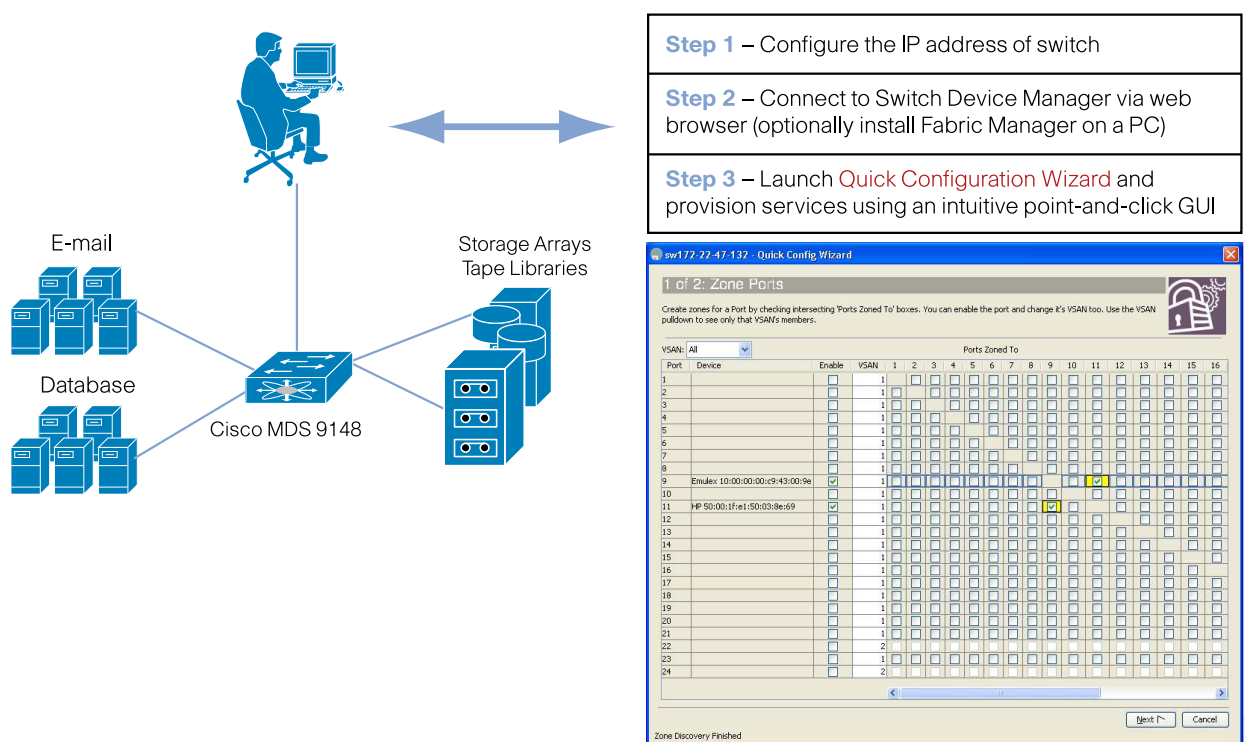|			
Redundant power supplies	No additional cost	Not available in entry-level switches	• Highly available; Cisco is the only vendor not to sacrifice high availability
Fabric management and monitoring	No additional cost	Fee for optional license	• Fabric-view access to manage and monitor the network

Ease of Use

Challenge: Reduce Management Complexity of Fibre Channel SAN Solution

SMBs have limited resources and time to handle complexities that arise from storage and SAN switch management. IT departments want SAN solutions than can be managed simply and easily.

Solution: Cisco Quick Configuration Wizard Enables Easy Management

Cisco's management software, with an intuitive GUI, makes configuration of the Cisco MDS 9148 an easy task for any IT administrator. Switch provisioning is made simple and secure through integration of the Cisco Device Manager with the Cisco Quick Configuration Wizard, which can be accessed through a simple three-step process shown in Figure 6.

Figure 6.   Cisco Quick Configuration Wizard for Simplified Ease of Use

Conclusion

The Cisco MDS 9148 Multilayer Fabric Switch, backed by years of innovation, brings a feature-rich solution to SMB customers at a cost point they can afford. This entry-level SAN switch comes with critical features built in to make any organization highly capable:

- High performance
- Flexibility, high availability, and security
- SAN virtualization to extend server virtualization to storage and consolidate the SAN

- Cost-effective fulfillment of application performance needs
- Ease-of-use through management simplicity, which is a crucial requirement for resource- and time-constrained IT departments

Cisco offers best-in-class SAN solutions for the SMB market with the customer always in mind.

For More Information

To learn more about this offering and the business benefits of the Cisco MDS 9148, please visit http://www.cisco.com/go/storage or contact your local account representative.

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